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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/825,021	04/15/2004	Shannon V. Davidson	064747.1017	7500
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BAKER BOTTS LLP 2001 ROSS AVENUE 6TH FLOOR DALLAS, TX 75201-2980			EXAMINER VO, TED T	
			ART UNIT	PAPER NUMBER
			2191	
			NOTIFICATION DATE	DELIVERY MODE
			02/11/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTOmail3@bakerbotts.com
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Office Action Summary

Application No.

10/825,021

Applicant(s)

DAVIDSON ET AL.

Examiner

Ted T. Vo

Art Unit

2191

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 25-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 25-26 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 5/18/07, 9/14/07, 11/07/07, 1/9/08, 1/30/08
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This action is in response to the communication filed on 11/07/2007.
Claims 25-26 are newly added. Claims 1-26 are pending in the application.

Election/Restrictions

Newly submitted claims 25-26 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: They do not present the same with the original claims.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 25-26 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Response to Arguments

2. This is in response to the arguments filed in the remarks filed on 11/07/2007.

Regarding the argument under the rejection of 112 second paragraph, Applicants do not explain "integrated fabric". Applicants solely direct to the texts in the specification. With their depicting of FIG. 2A-C, it appears as the hardware. Therefore, for the interpretation, examiner will take hardware for "integrated fabric". However, the limitation, "*each of unallocated HPC nodes comprises an integrated fabric*" remains being indefinite because the meaning of the claim is vague and it does not clearly point out a claimed subject matter. The language of *integrated fabric* will carryout in the section of 35 USC 101 until Applicants clearly pointing out its meaning.

With regard to “*determine an unallocated subset from the plurality of HPC nodes*,” this recitation remains unclear because of lacking inter steps or basic steps.

There is no explaining from the Applicants. There is no definition or explaining in the specification for what is an unallocated subset of HPC nodes. Therefore, the limitation remains being indefinite.

Regarding to the argument to the rejection of Claims 1-24 under Keller, it appears that Applicants argued Keller fails to disclose, teach, or suggest determining an unallocated subset from a plurality of high performance computing (HPC) nodes, each of the unallocated HPC nodes comprising an integrated fabric, as independent Claim 1.

Examiner disagrees: Keller discloses a HPC resource management system. As noted in the Keller, the HPC directs to the cluster of nodes (p. 5: sec. 3.1). These nodes (Resources) are memories that are “integrated fabric” arranged in a grid environment. A scheduler will search for matching available resources. As a result, it has the ability to co-allocated resources (p. 6). It determines and allocates several different resources in a queue for execution. See p. 15, last paragraph, refer to N nodes that are not allocatable when a user request for more then T nodes. The claimed limitation *unallocated subset from the plurality of HPC nodes* reads on the N nodes because these nodes are the HPC clusters. Since the scope of the claims is given as what it is, it reads on the reference.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-8: The limitation "determining an unallocated subset from a plurality of HPC nodes" is ambiguous because it mentally indicates an aspect rather physically points out a subject matter. There is no explaining in both Applicants' argument and specification. Therefore, the meaning of "determining in "unallocated subset" is unclear. The explanation for this limitation is respectfully requested. What is it meant for "unallocated subset from a plurality of HPC nodes"?

The claim that recites unclear functionality is indefinite.

Claims 9-24 appear reciting in the similar manner of claims 1-8.

Claims 9-16 added newly limitation, "Software embodied in one or more tangible computer-readable media". However, this limitation is inconsistent or insufficient antecedent basis to the description in specification. Accordingly, this recitation is indefinite. It should be noted that computer-readable media include transmission media such as air, where transmission media are subjected to non-statutory under 35 USC 101.

Claims 1-24: The limitation, "*each of unallocated HPC nodes comprises an integrated fabric*" remains being indefinite because the meaning of the claim is vague and it does not clearly point out a claimed subject matter.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. The claims 9-24 are rejected under 35 U.S.C 101 because the claimed invention is directed to non-statutory subject matter.

As per Claims 9-16: Claims 9-16 recites software embodied in one or more tangible computer-readable media. Using the term, "tangible computer-readable media", which is not defined in the specification, would cover non-statutory subject matter such as air or wireless media. Therefore, the claims do not meet the statutory requirement because it includes abstract idea.

As per Claims 17-24: Claims 17-24 recites a "system" which comprises "nodes". A node comprises an "*integrated fabric*". There is no link to a physical system. The Claims thus merely recite a program or data structural per se.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-24 are rejected under 35 U.S.C. 102(a) as being anticipated by Hovestadt, Axel Keller and et al., "Scheduling in HPC Resource Management Systems: Queuing vs. Planning", Proceedings of the 9th Workshop on Job Scheduling Strategies for Parallel Processing, Seattle, WA, pages: 1-19, 6-2003 (hereinafter: Keller).

Given the broadest reasonable interpretation of followed claims in light of the specification.

As per Claim 1: Keller discloses,

A method (p.6, Fig. 2) ***comprising:***

determining an unallocated subset (see p. 15, last paragraph *from a plurality of high performance computing (HPC) nodes* ("nodes in a cluster"), **each of the unallocated HPC nodes comprising an integrated fabric** (p.6, "an ability to co-allocated resources" (i.e. allocated several different resources in a queue for execution - Note: see p. 15, last paragraph, refer to N nodes that are not allocatable when a user request for more than T nodes). Also see p. 16, sec. 4.4 refer: "dependency graph": *subset of HPC nodes*, refer: hypernodes: *unallocated subset* - See p. 14, "Mapping": I/O nodes, partition topologies, memory constraints, etc.: *integrated fabric*);

selecting an HPC job from a job queue (i.e. an execution is selected on a job queue); **and executing the selected job using at least a portion of the unallocated subset of nodes** (See p. 16, the grouping of different dependency graphs in the HPC scheduling – the ability of nodes being interconnected by edge via communication endpoints).

As per Claim 2: Keller discloses, **The method of claim 1, wherein selecting the HPC job comprises selecting the HPC job from the job queue based on priority** (See p. 3: sec. 2.1 Queuing Systems: queue priority), **the selected job comprising dimensions not greater than a topology of the unallocated subset** (See p. 15, last paragraphs: refer to Threshold, and N nodes are not allocatable).

As per Claim 3: Keller discloses, **The method of claim 2, wherein selecting the HPC job from the job queue based on priority comprises: sorting the job queue based on job priority** (p. 3, sec. 2.1); **selecting a first HPC job from the sorted job queue** (p. 3, sec. 2.1); **determining dimensions** (i.e. Network topology, or see Fig. 1 the axis of Available resources) **of the first HPC job with the topology of the unallocated subset** (p. 14, in Mapping, see "static" and dynamic", and p. 15: "N"); **and in response to the dimensions of the first HPC job being greater than the topology of the unallocated subset** (See Fig. 1 and p. 15: "system wide node limit"), **selecting a second HPC job from the sorted job queue** (i.e. ability of the queue systems for using free resources with waiting resource requests (in p. 3), ability of co-allocation, of grouping different dependency graphs of the queue system and planning (sec. 2.1 and 2.2)).

As per Claim 4: Keller discloses, ***The method of claim 2, wherein the dimensions of the first HPC job are based, at least in part, on one or more job parameters and an associated policy (i.e. resources/against time axis as mentioned in p. 3:1-3).***

As per Claim 5: Keller discloses, ***The method of claim 2, further comprising dynamically allocating a job spare from the unallocated subset based, at least in part, on the dimensions of the HPC job, wherein executing the selected job comprises executing the selected job using the dynamically allocated job spare*** (See sec. 3.2, start at p.6, and noted that the queue systems/planning has an ability to allocate job spare as using the free recourses for waiting request resources).

As per Claim 6: Keller discloses, ***The method of claim 1, wherein the plurality of HPC nodes comprise a first plurality*** ((unclear meaning: and as part of 112 second paragraph in this action: interpreted as a cluster in the HPC system) see node in clusters in p. 1, different dependency graphs, p. 16) ***and the method further comprises: determining that dimensions of the selected job are greater than a topology of the first plurality; selecting one or more HPC nodes from a second plurality*** (See Fig. 1, and last paragraph in p. 15), ***each of the second HPC nodes comprising an integrated fabric; and adding the selected second HPC nodes to the unallocated subset to satisfy the dimensions of the selected job*** (See the sec. 2.1 and 2.2).

As per Claim 7: Keller discloses, ***The method of claim 6, further comprising returning the second HPC nodes to the second plurality*** ((unclear meaning: and as part of 112 second paragraph in this action) see node in clusters in p. 1, different dependency graphs, p. 16, i.e. another job/ node is selected in queuing)

As per Claim 8: Keller discloses, ***The method of claim 1, further comprising; determining that a second HPC job that was executing on a second subset in the plurality of HPC nodes has failed*** (See last paragraph in p. 15, or the description of System Wide Node Limit (i.e. SWNL), for the case when the user requests a number of nodes $T+N$ greater than the threshold T); ***adding the second subset to the unallocated subset; and adding the failed job to the job queue*** (the SWNL defines automatically the number N is not allocatable notes).

As per Claims 9-16: See rationale addressed in the rejection of Claims 1-8, respectively.

As per Claims 17-24: See rationale addressed in the rejection of Claims 1-8, respectively.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted T. Vo whose telephone number is (571) 272-3706. The examiner can normally be reached on 8:00AM to 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wei Y. Zhen can be reached on (571) 272-3708.

The facsimile number for the organization where this application or proceeding is assigned is the Central Facsimile number **571-273-8300**.


Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for

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unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTV
February 1, 2008


TED VO
PRIMARY EXAMINER